Chapter 2.1 STATE BACKGROUND INFORMATION

Population

The Commonwealth of Virginia covers 40,741 square miles, ranking 36th among the states in size. This area is divided into six Department of Environmental Quality (DEQ) regional offices and two satellite offices (Figure 2.1-1). According to the most recent census (1994), the population of the Commonwealth was estimated to be 6,551,500; 2.5% of the total United States population. It has grown 18.3% between 1980 and 1994, ranking 12th nationally, and continues to grow. About 72% of all Virginians live in eight metropolitan areas; Northern Virginia, Norfolk-Virginia Beach-Newport News, Richmond-Petersburg, Roanoke, Lynchburg, Charlottesville, Danville, Johnson City-Kingsport-Bristol. Nine percent of the population lives in seven smaller urban areas and 19% live in rural areas.

Geography

Virginia is over 400 miles wide along its southern boundary, reaching from the Atlantic Ocean in the east, crossing the eastern continental divide into the Mississippi Basin to the west. Along the way, Virginia crosses five physiographic provinces (Figure 2.1 -2). The southwestern edge of the state touches upon the margin of the Cumberland Plateau, rugged terrain with formations of sandstone and shale. Virginia's coal mining industry is concentrated in this area. The Valley and Ridge province encompasses the long, parallel ridges of the Appalachian Mountain chain in western Virginia. Erosion resistant quartzites and sandstones form the ridgetops, while streams have carved valleys into the softer limestones and shales. The narrow Blue Ridge Mountain province is made up of hard greenstone, quartzites, and granites, igneous and metamorphic rocks that originated as ancient lava flows. These mountains are among the oldest on earth. East of the Blue Ridge Mountains lies the rolling Piedmont of central Virginia. This area is underlain by a complex layer of igneous and metamorphic rocks. The Triassic Basins, ancient down-faulted basins filled with sedimentary rocks and igneous intrusions are major sub-units of this province. A distinctive fall line, marked by waterfalls and rapids across the major rivers, divides the Piedmont from the Coastal Plain. Virginia's flat Tidewater area consists of deep, unconsolidated deposits of sand, gravel, fossil shells, and clay. The basement formation of granite, exposed at the fall line, is buried under 2,900 feet of sediment at the Atlantic Coast.

Water Resources

A summary of Virginia's water resources is provided in Table 2.1-1. Virginia has an estimated 49,460 miles of streams and rivers divided into nine major basins (Figure 2.1 - 3). This estimate represents mileage determined by EPA's River Reach File 3, the Digital Line Graph database as well as estimates from Virginia's Stream Gazetteer. Annual rainfall averages almost 43 inches. Total combined flow of all freshwater streams in the state is estimated at about 25 billion gallons per day. The 248 publicly owned lakes in the Commonwealth have a combined area of 162,230 acres. Three large impoundments (Lakes Gaston, Kerr, and Smith Mountain) account for two-thirds of this total. Many thousands of other small, privately held lakes and ponds, some of significant size, dot the landscape.

Other significant water features of Virginia include approximately 236,900 acres of tidal and coastal wetlands, 808,000 acres of freshwater wetlands, 120 miles of Atlantic Ocean coastline, and over 2,500 square miles of estuaries. Virginia's highly indented shoreline, including the Chesapeake Bay and its sub-estuaries, is conservatively estimated to be 3,315 miles long.

Table 2.1 - 1 Virginia Water Resources Atlas

State Population (1994 census) - 6,551,500

State Surface Area - 40,741 square miles

Major River Basins

Potomac/Shenandoah	Tennessee/Big Sandy
James	Chesapeake Bay/Small Coastal
York	Rappahannock
Roanoke	New
Chowan/Dismal Swamp	

Perennial River Miles 49,460

Total Non-Tidal Stream Miles 49,460

Miles of Border River (Potomac) – 180

Publicly-Owned Lakes and Reservoirs	Number	Acres
Greater than 5,000 acres	5	109,838
Less than 5,000 acres	243	52,392
Total	248	162,230

Acres of Freshwater Wetlands - 808,000

Acres of Tidal and Coastal Wetlands - 236,900

Estuary Square Miles - 2,500

Atlantic Ocean Coastal Miles – 120

Total Coastal Shoreline Miles,
Including Chesapeake Bay and Tidal
Tributaries to a Width of 110 Feet - 3,315

Statewide Average Annual Rainfall - 42.8 inches

Average Freshwater
Discharge of All Rivers - Approximately 25 billion gallons per day

Land Use

Virginia's landscape is dominated by forests, covering approximately 55.6% of its total area (Table 2.1-2). However, according to the Virginia Department of Forestry, a loss of commercial forest and cropland has contributed to an increase in urban land from 10.4% to 14.8% from 1991 to 1995.

The second most prevalent land use in Virginia is agriculture, covering 25.9 percent of the State's total land area. Cropland accounts for 2,903 square miles, about 7.1 percent of the State's total area; pasture and hay production accounts for 6,845.3 square miles, or about 16.8 percent of the State's land. The remaining 6,029 square miles of land area, about 14.8 percent of the State, includes urban areas. Inland waters account for the remaining 3.7%.

Table 2.1-2 Virginia Statewide Land Use Summary

Commercial Forest	20,058.6 mi^2	49.2%
National Forests	2,550.0 mi^2	6.4%

Total Forested Land	**22,608.6 mi^2**	**55.6%**	
Cropland	2,903.4 mi^2	7.1%	
Pasture/Hay	6,845.3 mi^2	16.8%	
Other	828.1 mi^2	2.0%	
Total Agricultural Land	**10,576.8 mi^2**	**25.9%**	
Other (Including Urban)	**6,029.1 mi^2**	**14.8%**	
Total Land Area	39,214.5 mi^2	96.3%	
Inland Waters	1,526.4 mi^2	3.7%	
Total Area	**40,740.9 mi^2**	**100.0%**	

In summary, Virginia is fortunate to have abundant, diverse water resources. However, changing land use patterns and an expanding urban population are bringing new challenges to water pollution control. Clean water is a valuable resource to the citizens of the Commonwealth. The following chapters of this report describe existing water quality, and the various programs which are responsible for its protection and ultimate improvement.